

### **REMARKS**

Applicant has carefully reviewed and considered the Office Action mailed on October 24, 2001, and the references cited therewith. Claims 13-24 are amended and claims 37-85 are canceled per the election as discussed below. As a result, claims 1-36 are now pending in this application.

### **Affirmation of Election**

As provisionally elected by Applicant's representative, Daniel Kluth, on October 10, 2001, Applicant elects to prosecute the invention of Group I, claims 1-36.

The claims of the non-elected invention, claims 37-85, are hereby canceled. However, Applicant reserves the right to later file continuations or divisions having claims directed to the non-elected inventions.

### **Drawings**

The drawings have been deemed acceptable subject to the correction of informalities per the "Notice of Draftperson's Patent Drawing Review." The informalities will be corrected upon receiving a Notice of Allowance, unless Applicant is otherwise directed by the Examiner.

### **Specification**

The title was deemed not descriptive and a new title was suggested by the Examiner. Applicant has followed the Examiner's suggestion as far as possible but the title suggested by the Examiner describes the invention too narrowly. For example, our claims are not limited to "implanted oxide" since ion implantation of atomic nitrogen and other ions are described. Also, the benefits of the ion implantation is more than for the enhancement of electron emissions. For example, and not by way of limitation, the implantation also acts to limit outgassing and acts to inhibit the degradation of the emitter.

### **§102 Rejection of the Claims**

Claims 1-3, 5, 7, 9, 11, 13-26, and 33-35 were rejected under 35 U.S.C. § 102(b) as being anticipated by Doan et al. (U.S. Patent No. 5,372,973) ("Doan"). Doan discloses a field emission display device with a conical micro-cathode, with the emitter tip (13) being coated with a low work function material SiO<sub>2</sub>. Applicant respectfully traverses this rejection.

The Examiner stated: "The limitation pertaining to the oxide layer being implanted is a method of manufacture and hence patentable weight is not given." As described below, ignoring a claim limitation in an anticipation analysis has no basis in the law. The Examiner further stated that certain claim limitations are functional and so no patentable weight is given. This is also without legal basis as described below. The Examiner also equated the term "embedded" with the term "coated." This is contrary to the plain meaning of these words as described below.

### **Required Claim Analysis under §102**

Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration. *In re Dillon* 919 F.2d 688, 16 USPQ 2d 1897, 1908 (Fed. Cir. 1990) (en banc), cert. denied, 500 U.S. 904 (1991). It is not enough, however, that the prior art reference discloses all the claimed elements in isolation. Rather, "[a]nticipation requires the presence in a single prior reference disclosure of each and every element of the claimed invention, *arranged as in the claim.*" *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984) (citing *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)) (emphasis added).

Applicant respectfully submits that the Examiner did not make out a *prima facie* case of anticipation because the Examiner improperly refused to give patentable weight to all claim elements. See also section 2131 of the Manual of Patent Examiner Procedure (M.P.E.P., 8<sup>th</sup> Ed., August, 2001)

Structural Limitations of the Claims

As is known to those skilled in the art, ion implantation produces a different material than coating one material over another. Ion implantation uses an ion accelerator to "shoot" ions of one material type into the lattice of another material. Ion implantation changes the atomic nature of the material and damages the lattice structure somewhat by forcing other types of atoms (impurities) into the lattice. The ions in the present invention are described as being atomic oxygen, in the form of O<sup>-</sup> or O<sub>2</sub><sup>-</sup> ions, one species of atomic nitrogen or an ionic nitride and others. This is not a coating. This is ion bombardment which results in a structurally different material.

A component of the present invention is an implanted or embedded layer of ions which can form an oxide or nitride layer at or under the surface of the emitter tip of the field emission display. (See specification at page 10, lines 14-16). The Examiner has dismissed the implantation limitations as being a method of manufacture limitation and has given the limitation no patentable weight in apparatus claims. Applicant respectfully disagrees with this position

"Embedded" and "Implanted" Limitations

All the words of a claim must be given patentable weight. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). See also M.P.E.P. section 2131.

An implanted oxide layer, as described in claim 1, is a structurally different element than an oxide coating as described in Doan et al. An imbedded layer, as described in claim 14, is also a structurally different element than an oxide coating as described in Doan et al. These are limitations which cannot be ignored. The claims must be analyzed as a whole in light of and consistent with the specification and considering all claim limitations. When evaluating the scope of a claim, every limitation in the claim must be considered. See, e.g., *In re Ochiai*, 71 F.3d 1565, 1572, 37 USPQ2d 1127, 1133 (Fed. Cir. 1995).

### Functional Limitations of the Claims

There is no prohibition against functional limitations in claims. A functional limitation is an attempt to define something by what it does, rather than by what it is. There is nothing inherently wrong with defining some part of an invention in functional terms. Functional language does not, in and of itself, render a claim improper. *In re Swinehart*, 439 F.2d 210, 169 USPQ 226 (CCPA 1971). A functional limitation must be evaluated and considered, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used. A functional limitation is often used in association with an element, ingredient, or step of a process to define a particular capability or purpose that is served by the recited element, ingredient or step. *See* M.P.E.P. section 2173.05(g).

### Plain Meaning

The words of the claim must be given their plain meaning unless applicant has provided a clear definition in the specification. *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989). *See also* M.P.E.P. section 2111.01 In Webster's Ninth New Collegiate Dictionary (Merriam-Webster, 1989), embed is defined as "to enclose closely in or as if in a matrix (fossils embedded in stone)" and "to make something an integral part of (inflation was embedded in the economic system)." The same dictionary defines coat as "to cover with a coat" and "to cover or spread with a finishing, protecting or enclosing layer." By their plain meaning, these terms are quite different.

### Official Notice

If the Examiner is taking "Official Notice" that embedding an oxide produces the same structure as coating an oxide, Applicant respectfully traverses this assertion, and in accordance with M.P.E.P. sections 2144.02 and 2144.03, Applicant respectfully requests that the Examiner produce a reference to support his position, or an affidavit alleging the fact of the matter.

### Amended Claims

Claims 13-24 have been amended so that each of the claims includes the limitation of an "implantation," an "implantation layer," or an "embedded layer."

The bottom of page 4 of the Office Action states that Doan "discloses the SiO<sub>2</sub> layer being embedded (coated) in the surface of the emitter." Applicant respectfully objects to this characterization, i.e., that the external SiO<sub>2</sub> coating of Doan is somehow the same as or is equivalent to an embedded coating. To reiterate, an "implantation," "implantation layer," and an "embedded layer" are structures that differ significantly from a "coated layer" as taught by Doan.

Applicant therefore respectfully submits that claims 1-3, 5, 7, 9, 11, 13-26, 33-35 are patentable over Doan. Accordingly, Applicant respectfully requests withdrawal of the rejection and allowance of the claims.

### §103 Rejection of the Claims

The Examiner has the burden under 35 U.S.C. § 103 to establish a *prima facie* case of obviousness. *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). To do that the Examiner must show that some objective teaching in the prior art or some knowledge generally available to one of ordinary skill in the art would lead an individual to combine the relevant teaching of the references. *Id.*

The *Fine* court stated that:

Obviousness is tested by "what the combined teaching of the references would have suggested to those of ordinary skill in the art." *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 878 (CCPA 1981)). But it "cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination." *ACS Hosp. Sys.*, 732 F.2d at 1577, 221 USPQ at 933. And "teachings of references can be combined *only* if there is some suggestion or incentive to do so." *Id.* (emphasis in original).

The M.P.E.P. adopts this line of reasoning, stating that

In order for the Examiner to establish a *prima facie* case of obviousness, three base criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference

teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *M.P.E.P.* § 2142 (citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)).

An invention can be obvious even though the suggestion to combine prior art teachings is not found in a specific reference. *In re Oetiker*, 24 USPQ2d 1443 (Fed. Cir. 1992). At the same time, however, although it is not necessary that the cited references or prior art specifically suggest making the combination, there must be some teaching somewhere which provides the suggestion or motivation to combine prior art teachings and applies that combination to solve the same or similar problem which the claimed invention addresses. One of ordinary skill in the art will be presumed to know of any such teaching. (See, e.g., *In re Nilssen*, 851 F.2d 1401, 1403, 7 USPQ2d 1500, 1502 (Fed. Cir. 1988) and *In re Wood*, 599 F.2d 1032, 1037, 202 USPQ 171, 174 (CCPA 1979)).

Applicant respectfully submits that the Office Action did not make out a *prima facie* case of obviousness because the cited references fail to teach or suggest all of the elements of applicant's claimed invention.

#### Rejections in View of Doan

Claims 4, 6, 8, 10, 12, and 36 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Doan. In particular, the Office Action asserts it would have been obvious to one of ordinary skill in the art to modify ("rearrange") the oxide layer of Doan to arrive at Applicant's claimed invention.

Applicant respectfully submits that the layer of Doan cannot be merely "rearranged" to arrive at Applicant's claimed invention. The implantation of ions represents a significantly different structure than the surface coating taught by Doan. Because rearranging the coating of Doan would not yield Applicant's claimed invention, there would be no likelihood of success in attempting the re-arrangement, and hence no motivation to do so. Accordingly, a *prima facie* case for obviousness has not been made with respect to the cited claims. Applicant therefore respectfully requests that the rejection be withdrawn and the claims allowed.

Claim 36 includes the “implantation” limitation for the emitter. As stated above, this structural limitation differs significantly from a surface coating. The Office Action falls short of making a *prima facie* case for obviousness for claim 36 because the “implantation” limitation is not present in the cited prior art.

Applicant therefore respectfully requests that the rejection of claims 4, 6, 8, 10, 12, and 36 be withdrawn and the claims be allowed.

*Rejections in View of Doan and Greschner*

Claims 27-32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Doan and further in view of Greschner et al. (U.S. Patent No. 5,817,201) (“Greschner”). Applicant submits the Office Action fails to make a *prima facie* case for obviousness because the “embedded layer” claim limitation is nowhere found in the cited prior art. Like Doan, Greschner discloses providing an external coating of the tip body (9). There is no discussion in Greschner of an embedded layer as the term is used in Applicant’s claimed invention. Further, Applicant maintains that Doan does not include an embedded layer, contrary to the last paragraph on page 6 of the Office Action. Rather, as Applicant has argued above, Doan only teaches the use of an external coating. Thus, the combination of Doan and Greschner does not yield all the limitations of Applicant’s invention as claimed in claims 27-32.

Applicant therefore respectfully requests that the rejection of claims 27-32 be withdrawn and the claims allowed.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (612) 373-6904 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on this 24 day of January, 2002.

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